

CLAIMS

1. A method of operating a fuel cell, comprising the steps of:
activating a membrane electrode assembly by supplying reactants to the
5 membrane electrode assembly; and
selectively limiting amount of electrons collected from localized areas of
the membrane electrode assembly surface.
2. The method of claim 1, wherein the step of selectively limiting comprises
10 the step of utilizing a porous, Z-axis electrically conductive, non-linear positive
temperature coefficient material located together with the membrane electrode
assembly to selectively limit the amount of electrons collected from localized
areas of the membrane electrode assembly.
3. The method of claim 2, wherein the step of utilizing further comprises the
15 step of disposing a porous, Z-axis electrically conductive, non-linear positive
temperature coefficient material on and in intimate contact with at least one of
the sides of the membrane electrode assembly.
4. The method of claim 2, wherein the Z-axis electrical resistivity at
20 localized areas of the non-linear positive temperature coefficient material
changes from a first value to a second value in response to a trigger condition
at areas of the membrane electrode assembly adjacent to the localized areas of
the non-linear positive temperature coefficient material.
5. The method of claim 4, wherein the trigger condition is created in
25 response to a combination of one or more elements selected from the group
consisting of temperature, pH, hydrogen concentration, electrolyte water
content, electrolyte thickness, electrolyte ionic conductivity and electrolyte
30 electronic conductivity of the membrane electrode assembly adjacent to the
non-linear positive temperature coefficient material layer, crossing a threshold
value.